Max

The Macintosh* emulator for your Amiga*

User's Guide

Printed in Canada

A-Max™

The Macintosh® emulator for your Amiga®

Version 1.0

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INTRODUCTION

A-Max is a hardware and software combination that allows Macintosh software to run on any Amiga model with any amount of memory installed. The Amiga offers several advantages over the Macintosh in that it has a higher resolution, faster processor than the Mac and Mac Plus, and allows for more RAM. An Amiga system with A-Max lets you run all the Amiga's software as well as giving you access to most of the productivity software that has made the Mac a success.

This manual will tell you how to use the A-Max system and point out the differences between an Amiga with A-Max and a Macintosh. It is assumed that you are familiar with the Macintosh system and know how to use the Mac applications you want to run. You should read this manual in its entirety before starting to use A-Max.

Your A-Max package should contain:

● The A-Max cartridge
● One disk labelled "A-Max Program Disk"
● One disk labelled "A-Max Utilities"
● This manual
● An A-Max registration card

It is very important that you complete and mail the registration card back to us. As well as giving you a 90 day warranty, this card is the only way we can inform you of product upgrades and other information regarding A-Max. Send your card now.

The A-Max Program disk contains a file "ReadMe" that has information that was unavailable at the time this manual went to print. After reading the manual, you should read this file for any updates and corrections.

In order to use A-Max, you must supply:

● Apple 64K or 128K boot ROMs. These come as a set of two 28 pin chips from an original Mac (64K ROMs), a Mac 512KE (128K ROMs) or a Mac Plus (128K ROMs). It is preferable to use 128K ROMs with A-Max rather than the older 64K ROMs. The 128K ROMs have several advantages over the 64K ROMs in that they contain the newer Mac HFS disk filing system, they run faster,

and they run more of the newer software and system disks. Note also that if you have a non-68000 processor in your Amiga (such as a 68010/20/30 processor in an accelerator board), you will require the 128K ROMs as the 64K ROMs are not compatible with these more advanced processors.
● A Macintosh system disk in either A-Max, Magic Sac or Mac format (see Section 3 for information on what you will need in the way of Apple system software). If the disk is in Mac format and you don't have a Mac disk drive, you will need to transfer the disk using the Disk Transfer software as described in section 1.5 before you can make use of it. Often you will find that Mac application disks have System and Finder files already on them.
● The Mac applications and data you want to run, again, in A-Max, Magic Sac or Mac format (if you have a Mac drive).

You may also want:

● An Apple 800K external disk drive. This will enable you to use Mac format disks directly under A-Max without having to first transfer them to A-Max format. It also allows you to format and write Mac format disks so you can transfer data back to the Macintosh.

1. INSTALLING A-MAX

1.1 Making Backups

The first thing you should do is make a backup copy of the "A-Max Program Disk." This disk is not copy-protected so it can be backed up with the Amiga Workbench "Duplicate" menu command, the CLI "Diskcopy" command, or any Amiga backup utility.

The "A-Max Utilities" disk is not copy-protected. However it is in a special format that has two partitions - one is read by a Mac in an Apple drive, and the other by A-Max in an Amiga drive. This allows the same disk to hold programs for two machines at once. The A-Max half has the "Disk Receive" program and the A-Max "File Transfer" program; the Mac half has the "Disk Transfer" program. You should backup the A-Max half of the utilities disk once you get A-Max up and running with a system disk. The Mac half can be backed up by reading files off it onto a Macintosh (or with A-Max and an Apple external drive).

ReadySoft supplies A-Max without copy-protection for your convenience so please take care not to lend, give or otherwise distribute this program to anyone. Remember that software piracy discourages development of new products and upgrades.

1.2 ROM Installation

There are several revisions of both the 64K and 128K ROMs but all revisions will function equally well. The 64K ROMs are Apple part numbers 342-0220-X and 342-0221-X and the 128K ROMs are Apple part numbers 342-0341-X and 342-0341-X where X is the revision letter. Often the set of two chips will have different revision letters but always keep the two as a set - don't try to match the revision letters.

Your two Mac ROM chips must be inserted into the sockets on the A-Max cartridge. To do this you must first remove the top off the A-Max case. When the case is open, you will see a circuit board with several small chips and two large 28 pin IC sockets. Insert the two ROM chips into the sockets (either chip in either socket - the order doesn't matter) with the U notch of each chip pointing in the same direction as all the other smaller chips on the board.

To insert each chip, start with one row of pins resting lightly in their sockets then start the second row and finally push the whole chip firmly into its socket. If the chip is very hard to push in all the way, check that no pins are bent up underneath the chip. If there are, straighten them out and try again.

When both the ROM chips have been socketed, hold the board so that the "A-MAX (c) 1989 ReadySoft" text is the right way up and check that the notches of the chips point up and that no pins are bent up. Put the top back on the case.

1.3 Connecting an Apple 800K external drive

If you have an Apple 800K external disk drive, you can make use of it with A-Max to read, write and format Mac format disks direct-

ly. Note that the older single-sided (400K) Apple drives won't work with A-Max, they will simply be ignored.

With the Amiga's power off, plug the connector of the Apple drive into the 19-pin socket on the side of the A-Max cartridge. Once installed, you can leave the Apple drive plugged in at all times as it will not affect the Amiga when it is running normally (without A-Max).

Additional Amiga drives can be plugged into the 23 pin connector at the end of the A-Max cartridge.

We cannot guarantee that all third party Mac compatible drives will function with A-Max. It has been our experience that Apple manufactured drives work better than third party drives.

1.4 Installing the Cartridge

WARNING: Always turn off the Amiga before connecting or disconnecting the A-Max cartridge, or plugging in an Apple or Amiga drive.

With the ROMs in place, you can now connect the cartridge to the Amiga. The cartridge can either be plugged into the back of the last external Amiga drive or into the external disk drive port on the Amiga itself. If you will be connecting it to the Amiga, you should insert the support legs into the end of the cartridge. If you have an A500, the cartridge will sit at the same level as the computer and will not require legs. If you have an A1000, insert both of the legs into the holes in the bottom of the cartridge case. If you have an A2000, snap the legs at the point where there is an indentation then insert the shorter legs into the case.

Although it is probably more convenient to have the cartridge plugged into the back of an external drive, some disk drives will not allow this as they do not pass power through to their rear connector. If the A-Max software does not recognize the cartridge when it is plugged in through the back of an Amiga drive, you will have to plug the cartridge directly into the Amiga's disk drive port and plug the external drive into the cartridge's pass through connector.

Once the cartridge is plugged in, it may be left connected as it will not interfere with the normal operation of the Amiga. The cartridge will not become active until you run the A-Max startup program. Remember that the Amiga can only handle a maximum of four disk drives and with the A-Max cartridge installed you can have up to three Amiga drives and one Apple drive. Also, any Amiga drive connected through the A-Max cartridge will become one drive number higher than it was when directly connected to the Amiga (ie. DF1: will become DF2: but DF0: will always remain DF0:).

An A-Max Extender cable is available from ReadySoft for $24.95 plus $4.00 shipping and handling. This cable allows you to place your A-Max cartridge in a more convenient position, away from the back of your Amiga.

1.5 Transferring the first System Disk

If you have an Apple external drive you can skip this section as you can use your Mac format system disk directly in the Apple drive. Likewise, if you have a system disk already in A-Max or Magic Sac™/ Spectre™ format, you can use that disk directly in an Amiga drive and have no need to transfer the system software. Otherwise you must transfer your first system disk from Macintosh to A-Max format before A-Max can be used. This is necessary because the Macintosh uses variable speed disk drives while the Amiga uses constant speed drives making Mac format disks unreadable on Amiga drives.

To perform the transfer you must use the Macintosh Disk Transfer program supplied on the "A-Max Utilities" disk to make a Mini Transfer Disk that contains the System, Finder and other files that make up your system disk. As Mini Transfer Disks have a capacity of 272K, you may need to use a slightly older system version (eg. version 3.2) in order to fit the necessary files onto the disk. If you have one of the newer systems that won't fit into the 272K of a Mini Transfer Disk, use the FONT/DA MOVER program on the Macintosh before transferring the system files to remove the fonts and desk accessories that you will not require from the System file.

making the system files small enough to fit into 272K. See Section 4 for information on the Disk Transfer program.

1.6 Startup Program

The "A-Max Program Disk" contains the "A-Max Startup" program on an Amiga Workbench disk. Boot this disk by inserting it into the internal drive at the Workbench prompt (Amiga 1000 owners will have to Kickstart their machine first if necessary). When Workbench has finished loading, open the disk icon and click the "A-Max Startup" icon in the A-Max drawer to start the program. You will be taken to the A-Max Preferences window.

1.7 Hard Drive Installation

The A-Max startup disk is not copy-protected so it can be installed on a hard disk by dragging all the files in the A-Max folder to your hard drive icon.

From the CLI, you can copy A-Max with commands similar to the following (assuming your hard drive is DH1:):

makedir dh1:A-Max

copy a-max:a-max to dh1:a-max all

Amiga 1000 owners: If you wish to use your Kickstart RAM with A-Max (see Startup Preferences below), you must boot from the "A-Max Program Disk." This disk has a non-standard boot block that is necessary to utilize the Kickstart RAM with A-Max. It is advisable to keep your disk write-protected at all times to avoid viruses which, should they infect the A-Max startup disk, will not allow the additional Kickstart RAM to be accessed. If your boot block becomes corrupted, you can use the "FixBootBlock" command in the C directory of the A-Max Program Disk to rewrite the correct boot block.

Please note that when A-Max is running, you will not be able to access your hard drive from Macintosh applications. This may be addressed in future versions.

2. STARTUP PREFERENCES

The startup preferences window allows you to set the various options that A-Max provides. Saving these options allows you to set the default configuration A-Max uses.

2.1 Video Options

The buttons "Screen Height" and "Screen Width" control the dimensions of the screen you will be using. "Mac" width and height are 512 and 342 pixels, respectively, which are in some cases more compatible with certain software (typically games). "Wide" screens are 640 pixels across, and "High" screens are 400 (or 512 on PAL machines) pixels high.

The "Video Mode" button controls how the Mac screen is displayed. "Interlaced" allows the entire screen to be displayed, but will cause flickering on most monitors. "ECS" allows up to 480 lines to be displayed flicker-free on the screen if you have Commodore's new Extended Chip Set installed in your Amiga and an appropriate monitor. "ECS lace" displays a 960 line interlaced screen. "A2024", enables the 1008x800 video mode for the Commodore A2024 (or Viking Moniterm) full page monitor.

The remaining video mode options control how A-Max will display a non-interlaced screen. "Slow Scroll" and "Fast Scroll" smoothly scroll the screen according to the position of the mouse pointer. "Paged" will swap which portion of the screen is displayed as the mouse pointer moves from one half of the screen to the other. When using this mode, press the right mouse button to display the opposite (undisplayed) half of the screen.

The "Colors" button specifies which two colors A-Max will use for the Mac display. "Default" will give you the default A-Max colors. "System" will cause the first two current Workbench colors (as set with the Amiga's Preferences program) to be used for A-Max's foreground and background colors, repectively. To set the Workbench colors, double-click on the Preferences icon on A-Max Program Disk before loading A-Max Startup. Once the colors have been selected, click on the Preference's "Save" option to store your color selections on disk.

2.2 Memory Options

The "Memory Mode" button allows you to control what size Macintosh you wish to emulate. "No Expansion" will use only the amount of contiguous memory beginning a location zero (typically 512K). "No $C00000" will use all memory below $C00000 (this option will disable the second 512K of memory in A2000s and 1Mb A500s). "User Defined" allows you to select the amount of memory to be used during Mac emulation. To change the amount of memory selected, click on the box containing the current memory selection. Any RAM not selected here will be assigned to A-Max's bootable RAM disk.

The "Use Kickstart RAM" button allows Amiga 1000 owners to use their extra 256K of RAM with A-Max to increase the amount of memory available during Mac emulation. The only disadvantage in using this memory is that you will have to reload Kickstart when you want to return to AmigaDOS.

See section 5 for information on using expansion memory with A-Max.

2.3 Serial/Parallel and Imagewriter Emulation Options

The Macintosh has two serial ports and no parallel port; one port is known as the 'modem' port and the other as the 'printer port'. There are two buttons for each port to control how they are emulated.

The "Port" button controls whether the output for that Mac serial port comes out of the Amiga's parallel or serial ports. The usual choice is to have the Mac's modem port (Port A) data coming out of the Amiga's serial port, and the Mac's printer port (Port B) data coming out of the Amiga's parallel port. If you have a serial printer connected to your Amiga, you'll want to set the Port B (printer) output to the Amiga serial port. Serial transmission rates are restricted to between 110 and 19200 baud. Also, some Mac applications can optionally send printer output through the Mac modem port (Port A), so sometimes you may want to control the port A output.

The second button controls what sort of printer emulation happens with each port's output. "None" means that port's output is passed through unchanged. This option is usually used with serial (eg. telecommunications) output or with an Apple ImageWriter or LaserWriter connected to the Amiga. The remaining options enable emulation of the Apple Imagewriter printer if you have an Epson compatible 9 or 24 pin dot matrix printer connected to your Amiga. See section 8 for information on ImageWriter emulation and which option you should use.

2.4 Save and Go A-Max

The "Save" button will save your selected configuration to a file in your current directory so that the next time you run A-Max the same options will automatically be selected.

Clicking the "Go A-Max" button (or simply pressing RETURN) will start the A-Max boot process. Information will be read from the current directory then the Mac ROMs and A-Max cartridge will be checked. If all is well, you will be prompted to press RETURN, and then after a few seconds you will see the Mac boot screen.

If A-Max cannot startup, you will get an error message stating the problem. If you get a cartridge error, make sure the ROMs and cartridge are installed as outlined in section 1.

2.5 The Mac Boot Screen

Thirty seconds or so after clicking the "Go Mac" button, the Mac screen will appear with a picture of a disk with a flashing question mark - this is the Mac asking you to insert a startup disk. The Mac can accept a startup disk in any drive, not just the internal drive like AmigaDOS. If you have an Apple drive connected to the A-Max cartridge, you can simply place a Mac format system disk in that drive. Otherwise, you should put an A-Max, Magic Sac/Spectre, or Mini Transfer disk with a system on it in an Amiga drive.

When you insert a disk in any drive, A-Max will try to startup from it. If the disk contains the necessary files, you will get a happy Mac picture and then the "Welcome to Macintosh" window. If not, A-Max will probably reject the disk and display a flashing "X", indicating you should try another disk.

If you attempt to boot an HFS format disk (see page 18) with the 64K ROM you will get a black screen and a sad Mac picture - click the right mouse button to restart. The 64K ROM can boot only from MFS disks.

Also note that with the 128K ROM, when the Mac boot screen is displayed, the right mouse button may be held down to allow certain A-Max preferences to be changed. This may be more convenient than rebooting your system to make adjustments to your current configuration. Any changes made to the A-Max preferences by this method cannot be saved back to disk and will not be remembered when you reset to AmigaDOS (they will be remembered when you restart A-Max).

If you have the 64K ROM, hold the right mouse button when inserting the system disk. After the "Happy Mac" has been displayed for several seconds, the A-Max preferences will appear and can be changed as above.

3. A-MAX OPERATIONS

This section outlines A-Max features and differences from a standard Macintosh.

3.1 Keyboard Differences

A-Max emulates the Macintosh Plus keyboard which has a numeric keypad and arrow keys. There are three keys on the Plus keyboard that are not on the Amiga's; the key equivalents follow:

Command (clover leaf) ----- either Amiga key

Option ----- either Alt key

Clear ----- Del key

Otherwise, each Mac key is represented on the Amiga keyboard. The Mac "Key Caps" desk accessory will allow you to verify the keyboard mapping.

For programmers, the Macintosh interrupt switch can be simulated by typing shift-escape on the Amiga keyboard.

Note that the 64K ROM does not directly support the arrow keys, however many applications will recognize them even when running under the 64K ROM.

3.2 Disk Eject

Macintosh disk drives differ from most others, including the Amiga, in that they do not allow the user to eject disks upon demand as there is no eject button; rather, the Mac will eject a disk by itself on request by the user through the software. Although Amiga drives allow you to eject disks at any time, you should NEVER do so with A-Max unless A-Max is allowing you to. Failing to abide by this rule could cause your disks to become corrupted. The reason for this is that the Mac system, knowing you can't eject the disk, doesn't necessarily update directories or files immediately but rather waits until it must (ie. needs the memory or the disk is being requested to be ejected).

A-Max indicates that an Amiga drive is ready to be ejected by displaying its drive number in the right hand side of the menu bar. Drives are numbered from '1' to '4', with drive 1 being the internal Amiga DF0: other connected drives being numbered similarly 2-4. The Apple external 800K drive functions as it does normally on the Mac - disks are ejected by the the drive (ie. there is no screen prompt to eject disks from an Apple drive).

If you eject a disk from an Amiga drive without A-Max displaying the appropriate drive number, A-Max will detect this and FLASH the drive number on the menu bar. Should this happen, you should immediately replace the ejected disk back in the drive, which will clear the flashing prompt.

There are several ways to request a disk be ejected on the Mac:

- When the Finder (Apple's desktop program) is running, you can eject a disk by selecting it's icon and using the File menu command 'Eject', or Amiga-E from the keyboard.
- When an application is requesting a filename the dialog box will usually have an "Eject" button to eject the current disk.
- Often the command-shift-1 and command-shift-2 keyboard sequences will eject the disks in drives 1 and 2. Unfortunately, this option is unavailable for drives 3 and 4 as the Mac normally can only have a maximum of two drives.
- The supplied "Shutdown" program will eject all disks before rebooting. If the Finder Shutdown menu option is available on your system disk, it will eject all disks also. See the next section before using the Shutdown menu command.

NEVER RESET YOUR AMIGA (CONTROL-AMIGA-AMIGA OR POWER DOWN) WITHOUT EJECTING ALL DISKS THROUGH THE MAC SYSTEM!

3.3 Finder Shutdown

All versions of the Finder have a menu command called "Shutdown" under the "Special" heading. On Finder versions 5.3 or less, this option will crash your Amiga (control-Amiga-Amiga to reset out of this; you will then have to restart A-Max). Finder versions 5.4 and higher have two options, "Restart" and "Shutdown." With these newer versions of the Finder, the "Shutdown" option **will** work with A-Max (you'll get a black screen with a message saying it is safe to turn off your machine. Click "Restart" to reboot). Don't use the "Restart" MENU option; it will crash your machine as before.

If the "Shutdown" option on your system disk will not work, you can use the "Shutdown" program supplied on the "A-Max Utilities" disk to restart A-Max. The program is small enough to copy onto all your system disks for convenience.

3.4 Mouse Buttons

The Mac has a single button mouse, so the Amiga's right mouse button is unused when running A-Max. An exception to this is the

selection of A-Max preferences when A-Max is waiting for a startup disk.

3.5 Disk Drives

A-Max will allow the use of any 3.5" drives connected to your Amiga, including an Apple 800K drive connected to the back of the A-Max cartridge. A-Max will allow you to use the following formats in standard Amiga 3.5" drives:

- A-Max format; read, write, and format.
- Magic Sac/Spectre 128 format; read only. (Magic Sac and Spectre are Atari ST™ Mac emulators).
- Mini Transfer disks, created on a Mac with the Disk Transfer software; read only.

An Apple 800K drive will allow you to read, write and format standard Macintosh disks. Note that you can't read A-Max format disks in Mac drives or under AmigaDOS, they are for use only in Amiga drives when using A-Max.

Formatting Disks:

You format disks under A-Max in exactly the same way as you do on the Macintosh; placing a blank disk in the drive while at the desktop will bring up a dialog box asking you if you would like to format the disk. Click on the "Two-Sided" button (or "Initialize") to format an 800K disk. In unusual circumstances you may find it necessary to format a 400K disk; click on the "One-Sided" button or, if there is just an "Initialize" button, hold down an Amiga key while clicking that button.

If you are using an Apple 800K drive, the disk you format will be readable on standard Macintoshes; otherwise the disk will be in A-Max's special format that is readable only on Amiga drives with A-Max.

3.6 Sound

A-Max does not support the Mac's custom sound capabilities; the only sound supported is the standard Mac beep. It is extremely unusual for productivity software to use any other kind of sound, however most custom-sound producing programs will run without problem under A-Max, but silently. You can set the sound volume using the Mac's "Control Panel" desk accessory.

3.7 The A-Max RAM Disk

A-Max has a built-in RAM disk that automatically uses any Amiga memory you are not using as A-Max system memory (as selected with the "Memory Size" parameter in the startup preferences). The RAM disk is recoverable so it will survive A-Max system reboots and can be booted from if it contains the necessary system files (System and Finder at least).

The RAM disk can be "inserted" and "ejected" much like a 3.5" disk. To insert the RAM disk, press the Function 1 key (F1). The first time this is done, you will get the standard Mac dialog asking you to format the RAM disk - just click on initialize and type in a name for the disk (eg. "RAM"). Once this is done, the RAM disk will appear as an icon on the desktop and you can copy files to and from it as you would an ordinary disk. If you have allocated all Amiga memory to the Mac system, no icon will appear because there is no memory available for a RAM disk. It is possible for the Mac to eject the RAM disk in the same way that it ejects 3.5" disks; just press F1 to re-insert it (no information will be lost). The RAM disk will be resident until you reset to AmigaDOS.

To boot from the RAM disk, copy your system disk files into it, then restart A-Max with the Shutdown menu command or Shutdown program (see section 3.3 above). At the Mac boot screen (with the flashing question mark), simply press F1 to insert the RAM disk and if it is a valid system disk, booting will take place.

3.8 Time Clock

A-Max will automatically use the date and time from the Amiga clock if you have an A2000 or A500 with the 512K memory expander. All other types of clocks will be ignored.

If you don't have one of these clocks, use the ALARM CLOCK desk accessory if the applications you will be running require the correct date and time. You will have to reenter this information every time the Mac system is rebooted.

4. SYSTEM DISKS

A-Max supports all the known Apple system disks, however system disk versions 3.2 or greater are recommended. At the time this manual was printed, System versions up to version 6.0.2 had been tested. Some Mac applications will suggest or require a particular system version; you should, of course, use any recommended system version.

As explained in section 3.3 above, if you have a Finder version 5.4 or greater (usually found on system disks version 4.0 or greater), you will be able to use the Shutdown menu command.

If you are using the 64K ROM, your choice of system disks is further limited because the new Apple system disks require the 128K (or higher) ROMs. System 4.1 and above are not compatible with the 64K ROMs. System 3.2 is our recommended system version for the 64K ROM. In general, you should never mix Finder and System file versions; always keep them together as they come. However, Finder 5.4 and System 3.2 work well together, and will let you use the Finder Shutdown command.

As explained in section 6, the 64K ROM does not contain Apple's newer HFS filing system. Apple does, however, supply a system file called "Hard Disk 20," which will make the HFS system available to you if you are using the 64K ROM. The Hard Disk 20 file will work reliably only with System 3.2, which is one of the reasons it is recommended for use with the 64K ROM. If you are using the 64K ROM and require HFS support, you should put the "Hard Disk 20" file on your system disk.

Apple's MultiFinder™ may be used with A-Max if you have the 128K ROMs installed. It is found on system versions 4.2 and above.

If you are using the Apple ImageWriter, LaserWriter, ImageWriter printer emulation in A-Max, or a PostScript laser printer, you will also need the appropriate Apple printer drivers - "ImageWriter" for 9 pin graphics, "LQ ImageWriter" for 24 pin graphics, "LaserWriter" and "Laser Prep" for PostScript printers (see section 10 on using printers).

5. EXPANSION MEMORY

A-Max can make use of all your Amiga's RAM (minus 128K for A-Max overhead), however there are fundamental differences between how the Macintosh and Amiga handle expansion memory - the Mac always has its memory in one block starting at location 0 and is limited to 4Mb of RAM whereas the Amiga can handle up to 9Mb of RAM which can be present in several discontinuous blocks. All Amigas have 512K beginning at location 0 which will work well with A-Max, however certain applications will not function when expansion memory is being used.

The solution for such applications is to stop A-Max from using your expansion memory as Mac memory by reducing the "Memory Size" parameter on the startup preferences screen to 512K (provided the application will run in 512K) by selecting "No Expansion". This is the most compatible A-Max configuration because the first 512K of memory in an Amiga is identical to that in a Macintosh.

If you have Commodore's new Extended Chip Set installed in your Amiga, or have carried out the hardware modifications given in section 11, and have at least 1Mb of RAM, you will be able to use a 1Mb memory size as the most compatible A-Max memory configuration.

If you find that a particular application will not run, you should try reducing your memory size before giving up on that application (try "No Expansion" in A-Max preferences).

A-Max users with the 128K ROMs installed will be able to use Multi-Finder, Apple's "multitasking" system found on system disks 4.2 and above (6.0.2 is recommended). MultiFinder is particularly

useful with expansion memory (eg. 1Mb or more) because it controls the use of memory by applications in a manner that is compatible with A-Max. So, running an application under MultiFinder with expansion memory enabled may help for compatibility with A-Max. Note that some applications are not compatible with MultiFinder (particularly older versions of applications). "Switcher", the predecessor to MultiFinder for the 64K ROMs, will not work with expansion memory.

A-Max allows Mac software to make use of all the Amiga's expansion memory by permanently allocating the empty areas of the address space. This method means that the Mac OS is running with a certain amount of system memory, of which some proportion is always allocated. If you are using expansion memory and check the memory size given in the "About Finder" window, you will see an incorrect value given for the amount of RAM the Mac thinks it has. This is OK and is what is supposed to happen.

If your Amiga has memory at $C00000 (most commonly the 512K expansion RAM in Amiga 500's and 2000's) and you also have additional expansion RAM, you should consider reducing your memory size so that the $C00000 memory is not used by A-Max as this is the most incompatible of the expansion memory (it will still be used for the A-Max RAM disk). Select the "No $C00000" option in A-Max preferences. This can improve your compatibility with some applications.

If you have non-auto-configuring expansion memory in your Amiga, the ADDMEM command must be run before the A-Max preferences will recognize this memory. The easiest way to accomplish this is to place the ADDMEM command in the startup-sequence on your A-Max disk. Most expansion memory is auto-configuring and will not require this procedure.

Another option to improve your memory configuration is available from Spirit Technology Corp. for their InBoard 500 and 1000 memory expansion systems. Contact Spirit directly at (800) 433-7572 for more information.

Any Amiga memory not used by the Mac system will be assigned to A-Max's built-in RAM disk - see section 3.7.

6. APPLE'S FILING SYSTEMS - HFS and MFS

Apple uses two filing systems (disk operating systems) on its machines. The 64K ROM has the "MFS" filing system built-in and the 128K ROM has the "HFS" filing system built-in. The original 64K ROM Mac could only use single sided disks with the MFS filing system. When the Mac Plus was introduced with double sided 800K drives, Apple released the 128K ROMs which included the HFS filing system which was more efficient than MFS with larger capacity disks, such as double sided 3.5" disks and hard disks. For compatibility with the 64K ROM machines, Apple continued to use MFS for any disks that the user formatted single sided. This is possible because HFS is downwardly compatible with MFS so you can read an MFS disk with an HFS Mac, but you can't read HFS disks with an MFS (64K ROM) Mac.

How does this affect A-Max? If you have the 128K ROMs installed, you already have the HFS system built-in and you are able to use both HFS and MFS disks.

If you are using 64K ROMs, you are usually only able to use MFS disks. This will be a problem if you transfer a double sided disk from a Mac, because it will be in the HFS format (note that Magic Sac 800K disks will often be MFS). The solution is to install Apple's "Hard Disk 20" file on your system disk (see section 4). With the Hard Disk 20 file installed, you will be able to read HFS disks on your 64K ROM system, however, any disk you want to boot from must be in MFS format because at the time that you boot, the HFS system has not been installed. You should format an MFS 800K system disk by formatting a disk when have NOT installed the Hard Disk 20 file yet. Copy the Hard Disk 20 file and System 3.2 files onto it and use it to startup the Mac. You should see the message "Hard Disk 20 Startup" in the "Welcome to Macintosh" window - this indicates that the HFS system has been installed and you can now use 800K HFS disks. Any disks you format double sided will be in the HFS format - beware of this if you are creating a startup disk as a 64K ROM startup disk must be in the MFS format. Any disk you format single sided, or any disk formatted on the 64K ROM when you don't have Hard Disk 20 installed will be MFS.

7. MAC DISK TRANSFER SOFTWARE

An Apple external drive is the recommended method of transferring software to Amiga disks because it requires no transfer program, extra disks, or access to a Mac, and can be used to transfer data in both directions whereas the Disk Transfer program is limited to Mac to Amiga transfers only.

The Disk Transfer software allows you to transfer disks from Mac to A-Max format without the need of an Apple external drive for your Amiga, however, you will need access to a Macintosh in order to produce the transfer disks. The Disk Transfer software formats special disks on the Mac that are readable in Amiga drives by A-Max. These disks only have a double sided capacity of 272K so there is also a method of breaking up any size disk (400K or 800K) into several chunks on different transfer disks, if necessary.

7.1 Mini Transfer Disks

Mini Transfer Disks provide a quick method of transferring data less than 272K in size. It is the method you must use to transfer your first system disk if you don't have an Apple drive to use with A-Max.

STEP A: On a Macintosh, execute the Disk Transfer program on the "A-Max Utilities" disk. Click the "Make Mini Transfer Disk" button and then insert a blank disk in the destination drive when requested. The disk will be formatted and initialized to 272K if you have a double sided drive, or to 136K if you have a single sided drive, and when formatting is complete will be ejected. Once an MTD (Mini Transfer Disk) has been formatted, you can reuse it for subsequent transfers without reformatting. Now, quit from the Disk Transfer program and return to the Desktop.

STEP B: Insert your formatted MTD and copy the files you wish to transfer onto it.

STEP C: Execute the Disk Transfer program again, and click on the "Prepare Mini Transfer Disk" button. Insert the MTD in the destination drive as requested and click OK. The disk will be prepared so that A-Max can read the files on it in an Amiga 3.5" drive.

[The "Prepare MTD" command moves the MTD's contents to a different area on the same disk that is readable with Amiga drives. Macintosh disks are recorded at five different speeds of which, because Amiga drives are single speed devices, only two are readable by the Amiga. This is why the MTD's capacity is only 272K.]

The Mini Transfer Disk can now be used on the Amiga simply by inserting it in an Amiga drive while you are running A-Max. The disk will appear as an ordinary disk, but with a capacity of 272K. It is not possible to write to the Mini Transfer Disk, however, you can copy any files off the Mini Transfer Disk onto other A-Max format disks (that are writable) by dragging files as usual.

7.2 Full Disk Transfer

This option allows you to transfer a complete 400K or an 800K disk from the Mac to A-Max format, by storing the data on several transfer disks. Once transferred the data is read by the Amiga off the original source disk and the additional transfer disks created with the Disk Transfer program to create an A-Max format disk.

Click on the "Transfer Full Disk" to begin. The Disk Transfer program will ask you to insert the source disk and up to two additional blank transfer disks, one at a time (if the destination disks are unformatted, the program will format them before using them).

After the transfer has been completed, you can take the transfer disk(s) just created and the original source disk back to the Amiga. While running A-Max, execute the "Disk Receiver" program found on the "A-Max Utilities" disk. After clicking the "Receive Full Disk" button, the program will ask you to insert a destination disk (which will be formatted if necessary) and the disks you created on the Mac as well as the original source disk one at a time into an Amiga drive. The source disks will be reconstructed onto the destination disk in A-Max format so that they can be used in Amiga 3.5" drives with A-Max.

8. AMIGADOS FILE TRANSFER SOFTWARE

The File Transfer programs allow files on MFS or HFS A-Max format disks (or Mac format if you have an Apple external drive) to be transferred to AmigaDOS format disks, and vice versa. The files are transferred via a file transfer format (FTF) disk, which should not be confused with the Mini Transfer Disks used for converting disks from Mac to A-Max formats.

Note: Macintosh files have two parts - a resource fork and a data fork. The file transfer program moves only the data fork of the Mac file which make this program most suitable for transferring text or other plain information files (applications can't be transferred). There is no conversion between application data formats (eg. Microsoft Word to Excellence!) so you should save the files to be transferred as plain ASCII or text files. Some applications (eg. spreadsheets) may offer interchange file formats to allow files to be converted between application formats.

There is one conversion option that is required when transferring ordinary text files. The Mac uses a carriage return character as its end of line marker, while AmigaDOS uses a line feed character. To convert the Mac's CR characters to the Amiga's LF characters, and vice versa, select the 'CR to LF' (or 'LF to CR') to perform the conversion on files read FROM the FTF disk.

To transfer AmigaDOS files to an A-Max format disk, run the AmigaDOS 'File Transfer' program on the 'A-Max Program Disk' and format a transfer disk in the internal drive by clicking the 'Format' button (if you have previously formatted the FTF disk, you can click on 'Initialize' to delete all files currently on the disk). After the transfer disk has been created, click on the "To TD" button and select from the file requester the file you wish to transfer. If you have two Amiga 3.5" drives you should keep your AmigaDOS disk in the external drive to minimize disk swapping between the FTF disk and the AmigaDOS disk. Single drive owners can use a RAM disk to alleviate the need for disk swaps. After clicking OK you will be asked to insert the FTF disk into the internal drive and the file will be copied to the transfer disk. You can place several files on the transfer disk by clicking the 'To TD' button and selecting each file.

Once every file you wish to transfer has been placed on the transfer disk, exit the File Transfer program, start the A-Max system and boot the Mac. Execute the A-Max 'File Transfer' program on the "A-Max Utilities" disk and click the 'From TD' button. You will be prompted to select a destination drive for the transfer files (a blank disk may be formatted at this time) and then to insert the FTF disk in the internal drive. All the files on the FTF disk will then be copied to the destination disk. If any files already exist on the destination disk, you will be asked if you wish to overwrite them.

To transfer files from A-Max file format to AmigaDOS, follow the same procedure starting with the A-Max file transfer program to place Mac files onto the transfer disk and then reading them off with the AmigaDOS 'File Transfer' program. The AmigaDOS destination disk must be formatted by AmigaDOS before you transfer the files to it (use the Workbench "Initialize" menu command or the CLI's 'Format' command).

9. DOWNLOADING SOFTWARE

A-Max is compatible with many Macintosh terminal programs, including 'MacTerminal' or the public domain 'FreeTerm'. Once you have your A-Max system up and running you can use a Mac terminal program to download software from the many network libraries of freely distributable Mac software. Useful software can be found in both the Mac and Magic Sac/Spectre areas of the networks.

Terminal programs may also be used to transfer files between a Mac and an Amiga. Use a Mac terminal program running on both the Mac and A-Max, and download from one machine to the other with the "Send file" and "Receive file" menu commands.

10. PRINTERS

A-Max supports the following printers:

10.1 Apple ImageWriter

You will need the Apple "ImageWriter" printer driver on your system disk, which must be selected from the "Chooser" desk accessory and as connected to printer Port B. You will also need the correct cable to connect the Imagewriter to the Amiga's serial port. Select Port B to be the serial port and set the Port B Imagewriter emulation to "None" on the startup preferences screen. You should now be able to print as you would normally on a Mac with an Imagewriter.

10.2 Epson Compatible 9 & 24 pin Dot Matrix

9 pin: You will need the Apple "ImageWriter" printer driver on your system disk, which must be selected from the "Chooser" desk accessory. Select the appropriate Port B (serial or parallel). Select "IW-9 pin" for the Imagewriter emulation on port B.

24 pin: You will need either the Apple "ImageWriter" or "LQ ImageWriter" printer driver on your system disk. The LQ driver is needed if you wish to print 24 pin graphics; if you only have the "ImageWriter" driver you'll only be able to print 9-pin graphics. Select the printer port B as above, and select "LQ-24 pin" if you have the "LQ ImageWriter" driver, or "IW-24 pin" if you have the "ImageWriter" driver.

The ImageWriter emulation feature translates the ImageWriter control codes into Epson compatible codes as they go out the port. Because the ImageWriter printers have unusual print densities, some printing will not have a 1:1 aspect ratio when printed on an Epson printer. When printing "Best" quality graphics on an Epson compatible printer, the horizontal print density will be higher than that of an ImageWriter, so that the image will be compressed horizontally by about 40%. When printing 24 pin graphics, the vertical density is a little less than that of an ImageWriter LQ, causing pages to be longer than they would normally be, by about 20%.

10.3 Apple LaserWriter and other PostScript Laser Printers

A-Max does not support the AppleTalk local area network and thus cannot support direct printing to the LaserWriter, however, it is possible to print to the LaserWriter and other PostScript Laser printers by creating a PostScript text file and then dumping this file out the printer port with the supplied "File Dump" program.

Creating the PostScript File:

Your system disk should have the "LaserWriter" and "Laser Prep" files on it and the LaserWriter should be selected with the Chooser desk accessory. When selecting the LaserWriter, you can ignore any "Can't Open AppleTalk" messages. Proceed to print as you would normally, but immediately after clicking the "Print" button on the print dialog, press and hold command-K (**Amiga-K**) until the message "Creating PostScript file" is displayed. The file will be called "PostScriptX" where X is the next unused digit for each PostScript file on the disk.

Some Mac applications, such as Aldus' PageMaker, have a menu option to create a PostScript file.

Printing the PostScript File:

Before sending the PostScript file to your printer, you must have set the A-Max preferences so that either the modem port or, more typically, the printer port, is set to output to your printer (either parallel or serial) and that ImageWriter emulation is turned off.

Now run a program called "File Dump" supplied in A-Max format on the "A-Max Utilities" disk. This program will allow you to select the output port (modem or printer), baud rate, parity, number of bits, and handshake method (if you are using a parallel printer you won't need to set any of the serial parameters). When these parameters have been set, click on "Dump File", select the name of the file to dump and the file will be sent. Hold Command-".". (**Amiga .**) if you wish to stop the dump before it's complete. Once the file has been sent you will be returned to the first parameter selection screen. Repeat the process with another file or click on "Quit" to exit.

If you are using a LaserWriter printer, connect it to the Amiga's serial port, set the LaserWriter to 1200 or 9600 baud rather than AppleTalk mode, and set the baud rate on "File Dump" to agree with your baud selection on the LaserWriter. The LaserWriter operates in hardware handshaking mode at all times. A non-Apple PostScript printer should be set to "interactive" rather than "batch" mode and connected to the Amiga's serial or parallel ports with File Dump's output port set appropriately.

10.4 Other Printers

There are several third party suppliers of printer drivers to allow the Mac to use other types of printers. The best known are the SoftStyle printer drivers which are available for dot matrix, daisy wheels, HP LaserJet printers and others.

11. HARDWARE MODIFICATION FOR THE A500/A2000

As an option for extremely advanced users, the information given here will allow 1 Mb Amiga 500 owners with Rev. 4 and above motherboards and Amiga 2000 owners with B2000 motherboards (not the original German A2000 motherboards) to make jumper changes to their motherboard that will improve their memory configuration so that it is more compatible with A-Max. By making this change, the second 512K of expansion memory can be made contiguous with the first 512K block memory, creating a single 1Mb block that is nearly identical to the Mac Plus and SE memory map. The jumper change is the same as that needed when the Extended Chip Set is installed (if you already have the new Agnus chip installed, you have no need to make the changes indicated here). The Extended Chip Set will be available from Commodore and improves the capabilities of the Amiga by increasing the amount of chip RAM to 1Mb, and supporting a 480 line non-interlaced video mode for use with multi-sync monitors.

The one disadvantage to making this change without installing ECS is that AmigaDOS will incorrectly assume you have 1Mb of chip RAM in your machine, and attempt to use the memory as such. To stop this from happening you must insert a command into the startup-sequence of your Amiga boot disk(s) that corrects the memory type of the 512K expansion RAM. The command to do this is called "KillChip", and it can be found in the C directory of the "A-Max Program" disk. The "KillChip" command should be copied to all your Amiga boot disks and executed at the beginning of all your startup-sequences. A program called "CheckChipSet" is supplied in the A-Max directory of the "A-Max Program Disk" that, once run, will tell you if you have the new or old Agnus chip. If you have the new Agnus, you will not have to use the "KillChip" program. If you already have 1Mb of chip memory, your Amiga must already have and be setup for the new chip set and none of the following is necessary.

The jumper changes are given below. Do not attempt to make this modification unless you know what you are doing - ReadySoft cannot be responsible for any mishaps that may occur. Making the changes described here could void your warranty, so you may want your dealer to make the modifications.

A2000

J101: move jumper from 1-2 to 2-3

J500: open (this is normally soldered closed)

A500

The A500 change is much trickier than the A2000 change. As mentioned above, this change is only applicable to A500s with a motherboard revision number of 4 and above. If you have a revision 3 motherboard, there is a different and more complicated method to move the memory which we suggest you contact your dealer about. Note that you must have the A501 512K memory expander for this change to work.

Before you begin, find the revision number and verify that it is 4 or higher. There are now two changes to the motherboard you must make, the first is a jumper you must desolder and then resolder to a different pad, and the second is a trace on the board you must cut.

Locate the CPU (large chip marked 68000) and the ROM beside it. Between these two chip are three jumper pads collectively called JP2. Looking closely will reveal that the bottom and center pads are connected and the top one is not. You must reverse the order by making one cut with an EXACTO knife to open the bottom from the center and then solder the top to the center with a small dab of solder.

Next locate the memory expansion connector marked CNX which runs vertically near the front right of the motherboard. Toward the end of the connector that is furthest away from the front of the computer there are a number of traces on the board that run parallel to the connector. The one you must find is the third trace from the connector (be careful when counting because there may be traces that are obscured by white silk-screening). This trace runs to a pad approximately one inch down from the end of the CNX connector (there are a group of pads at this point, the one you want is the closest one to the connector). Use an EXACTO knife to cut this trace at any point within the area that it runs parallel to the connector.

12. COMPATIBILITY

As A-Max is an emulator and not a Macintosh, there will be some pieces of Mac software that will not run under A-Max. Almost all Mac software that goes through the Macintosh operating system (such as most productivity software) will run with A-Max.

Compatibility problems arise when software talks directly to the hardware, bypassing the operating system. This is most evident in Midi software, copy-protected software, games and programs designed to use Mac hardware add-ons. Unfortunately there is nothing that can be done to allow these types of programs to run with A-Max.

When A-Max is running, it takes full control of the Amiga, getting rid of the Amiga operating system. Without AmigaDOS running, A-Max cannot access Amiga hard drives which means the Mac software running under A-Max cannot use hard drives.

GLOSSARY

Agnus: An Amiga custom chip that determines the amount of Chip memory your Amiga can use. A new Agnus chip that is part of Commodore's ECS upgrade allows A500 and A2000 computers to address 1Mb of Chip memory, which is a more A-Max compatible memory configuration than the usual 512K Chip RAM size.

AppleTalk: Apple's local area network, also used to connect the LaserWriter laser printer to a Macintosh.

Chooser: A Macintosh desk accessory that allows the user to select which printer driver on the system disk will be used for printer output, as well as other options such as the printer output port.

Control Panel: A Macintosh desk accessory that lets the user control several different options, such as sound volume, mouse and keyboard. Equivalent to the Amiga's Preferences program.

Desk Accessory (DA): A special type of Mac program that is part of the System file and is accessible while running most applications from the Apple menu.

ECS (Extended Chip Set): A new version of the Amiga custom chips that allows the Amiga to address 1Mb of Chip RAM and display non-interlaced displays with a multi-sync monitor.

Finder: The program that creates the Apple desktop. Equivalent to the Amiga's Workbench. The Finder program has many versions and should always be run in conjunction with the correct version of the System file.

FTF (File Transfer Format): An intermediate disk format that is used in transferring files from AmigaDOS to and from an A-Max disk.

Hard Disk 20: An Apple system file that installs the HFS system for use with the 64K ROM.

HFS: Hierarchical Filing System, the current filing system (DOS) for the Mac which is built into the 128K ROMs, and is available with

the 64K ROM with the Hard Disk 20 program. HFS is always used with disks with a capacity greater than 400K, typically 800K double sided disks. See page 18 for a full discussion.

Interlace: An Amiga video mode that displays twice the normal number of screen lines at half the refresh rate. This leads to a flickering display on ordinary monitors, but some monitors are designed to minimize flicker, such as the high persistence Commodore A2080 monitor or the A2024 monitor.

Magic Sac: An Atari ST 64K ROM Macintosh emulator.

MFS: Macintosh Filing System, the first filing system (DOS) for the Mac which is built into the 64K ROMs and also compatible with the 128K ROMs. MFS is always used with single sided (400K) disks. See page 18 for a full discussion.

MTD (Mini Transfer Disk): A disk specially formatted on a Macintosh with a capacity of 272K that can be read directly in an Amiga drive. An MTD can be used to transfer software from a Mac format disk to an A-Max format disks if you have access to a Macintosh but do not have an Apple 800K drive connected to your Amiga.

Spectre 128: An Atari ST 128K ROM Macintosh emulator.

System: A file which contains information the Macintosh requires for use at all times. This includes startup information, fonts, desk accessories, and other system code. There are many different System file versions, some of which require certain ROMs.

System Disk: A disk that has the required system information on it for the Mac to startup (boot) from it. This always includes the System file and usually the Finder file (it is possible to have a system disk that consists of a System file and an application that is started automatically). Often there will be other files that are not absolutely necessary for startup, such as Control Panel option files, the Scrapbook and Clipboard files, and others. All the various system files are often held together in a system folder on the start-up disk.